Problem D: The Leaning Tower of Pisa

An elastic ball was dropped from the top of the tower of Pisa, which is exactly 179 feet high, and on each rebound the ball rises exactly one-tenth of the height from which it fell. What is the total distance travelled by the ball?

Experiment at the tower of Pisa

Now consider that the ball is originally thrown from a tower of height **H**, and every time the ball bounces its new height is equal to its previous height multiplied by a factor of $1 \div D$. Determine the distance that the ball would travel before it comes to rest.

Input

Input starts with a positive integer **T**, that denotes the number of test cases.

Each test case contains two integers **H** and **D** given in a single line. H is the height (in feet) of the tower and D is the multiplicative inverse of the factor by which the height of the ball is reduced after every bounce.

$T \leq 20000$; $1 \leq H \leq 10000$; $2 \leq D \leq 1000$

Output

For each test case, print the case number followed by the total distance that the ball travels before coming to a rest. Print the exact answer as a distance in feet and inches using the format *A* **ft** *B* **in** where *A* (the number of feet) is the highest integer possible.

If *B* (the number of inches) is an integer, print it as a single number; if $0 < B < 1$, print it as a simplified fraction p/q (with *p* and *q* coprimes); if *B* is a non–integer greater than 1, print it as a mixed number, with an integer part and a simplified fraction. See the samples below for more details.

Remember that there are 12 inches in 1 foot.

Sample Input	Output for Sample Input
4	Case 1: 218 ft 9 1/3 in
179 10	Case 2: 83 ft 12/13 in
81 79	Case 3: 28 ft 6 in
19 5	Case 4: 30 ft 0 in
10 2	